

CLAIMS

What is claimed is:

1. A nucleic acid comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:1 and sequences hybridizable to SEQ ID NO:1 under low stringency conditions, wherein said nucleic acid contains sequences derived from at least two mammalian sources and causes mammary specific gene expression.

2. A vector comprising the nucleic acid sequence of Claim 1.

3. The vector of Claim 2, wherein said vector is a retroviral vector.

4. A host cell comprising the vector of Claim 2.

5. A nucleic acid comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:2 and sequences hybridizable to SEQ ID NO:2 under low stringency conditions, wherein said hybridizable sequence comprises ATG sequences that have been mutated at at least one of the positions corresponding to nucleic acid residues 4, 112, 131, and 238 of SEQ ID NO:2.

6. A vector comprising the nucleic acid sequence of Claim 5.

7. The vector of Claim 6, wherein said vector is a retroviral vector.

8. A host cell comprising the vector of Claim 6.

9. A retroviral vector comprising at least one Pre-mRNA Processing Enhancer element.

10. The vector of claim 9, wherein said Pre-mRNA Processing Enhancer element is

selected from SEQ ID NO:2 and sequences hybridizable to SEQ ID NO:2 under medium stringency conditions.

11. The vector of claim 9, wherein said Pre-mRNA Processing Enhancer element is a WPRE element.

12. A nucleic acid sequence encoding an IRES coding sequence and a signal peptide coding sequence, wherein said IRES and signal peptide coding sequences are adjacent to one another.

13. The nucleic acid of Claim 12, wherein said signal peptide is selected from the group consisting of alpha-casein, human growth hormone, and alpha-lactalbumin signal peptides.

14. A vector comprising the nucleic acid sequence of Claim 12.

15. The vector of Claim 14, wherein said vector is a retroviral vector.

16. A host cell comprising the vector of Claim 14.

17. A method for producing a protein of interest comprising:

a) providing

i) a host cell; and

ii) a vector comprising at least one exogenous gene encoding a protein operably linked to a bovine/human hybrid alpha-lactalbumin promoter; and

b) introducing said vector to said host cell under conditions such that expression of said protein encoded by said exogenous gene is expressed.

18. The method of claim 17, wherein said vector further comprises a mutant RNA export element comprising SEQ ID NO:2.

19. The method of claim 17, wherein said vector comprises at least two exogenous genes.

20. The method of claim 19, wherein said at least two exogenous genes are arranged in a polycistronic sequence separated by an internal ribosome entry site/bovine alpha-lactalbumin promoter signal peptide.

21. A method for producing an immunoglobulin comprising:

a) providing

i) a host cell; and

ii) a vector comprising a first exogenous gene and a second exogenous gene, wherein said first exogenous gene encodes a first immunoglobulin chain and wherein said second exogenous gene encodes a second immunoglobulin chain and wherein said first and said second genes are separated by an internal ribosome entry site; and

b) introducing said vector to said host cell under conditions such that said first immunoglobulin chain and said second immunoglobulin chain are expressed.

22. The method of claim 21, wherein one of said first immunoglobulin chain and said second immunoglobulin chain is an immunoglobulin light chain and wherein the other of said first immunoglobulin chain and said second immunoglobulin chain is an immunoglobulin heavy chain.

23. The method of Claim 22, wherein said heavy chain is selected from the group consisting of γ , α , μ , δ , or ϵ heavy chains.

24. The method of Claim 22, wherein said light chain is selected from the group consisting of κ and λ light chains.

25. The method of Claim 21, wherein said immunoglobulin is a secretory immunoglobulin.

26. The method of claim 21, wherein said vector is a retroviral vector.

27. The method of claim 21, wherein said vector further comprises a bovine alpha-lactalbumin signal peptide.

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28. The method of claim 21, wherein said vector further comprises a bovine/human hybrid alpha-lactalbumin promoter.

29. The method of claim 21, wherein said first antibody chain and said second antibody chain are expressed at a ratio of about 0.9:1:1.

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30. An antibody produced by the method of claim 21.

31. The method of Claim 21, wherein said vector is selected from the group consisting of a retroviral vector and a plasmid vector.

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32. The method of Claim 21, wherein said vector is a retroviral vector.

33. The method of Claim 32, wherein said retroviral vector is a pseudotyped retroviral vector.

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